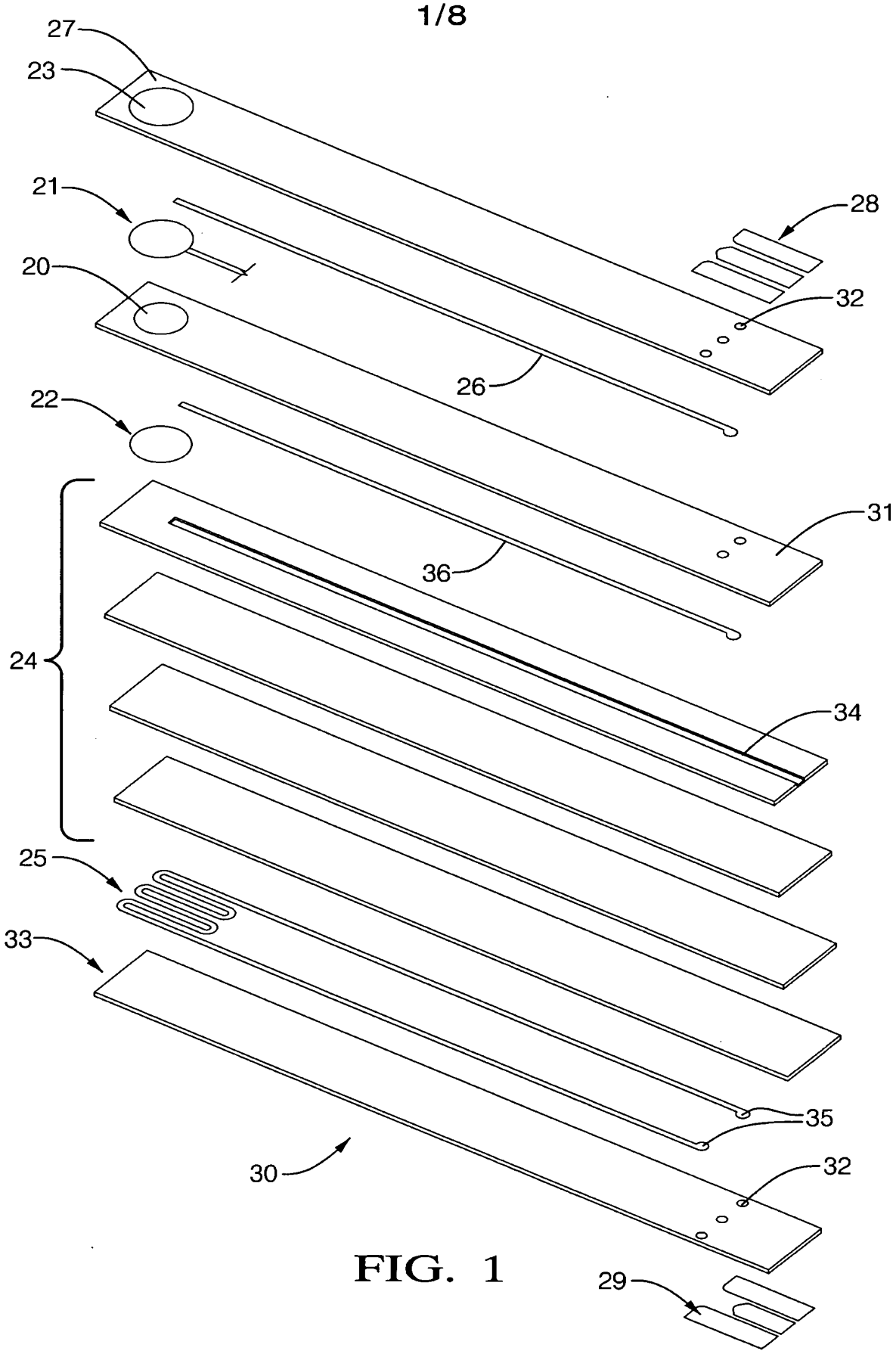

FIG. 1

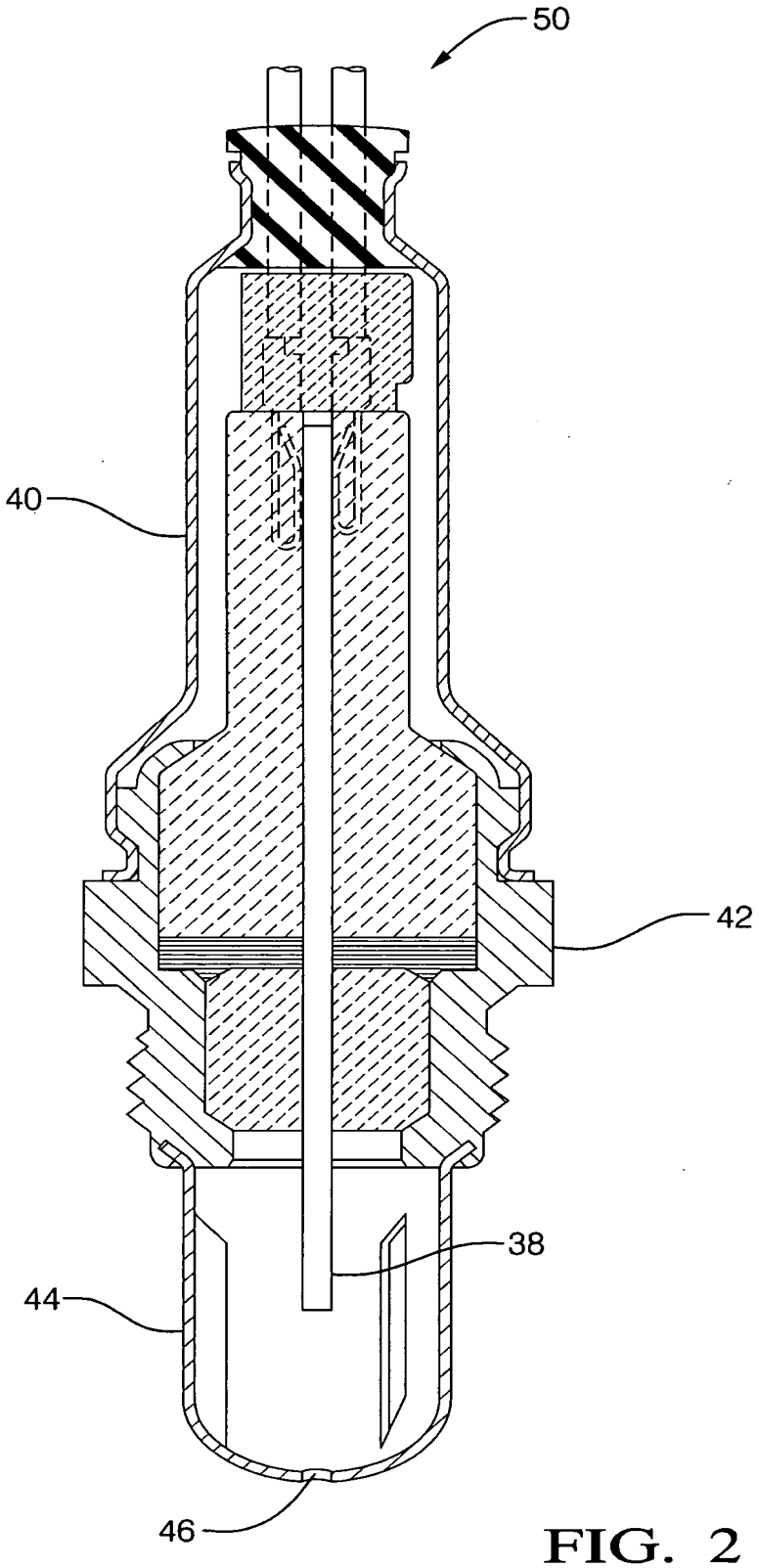

FIG. 2

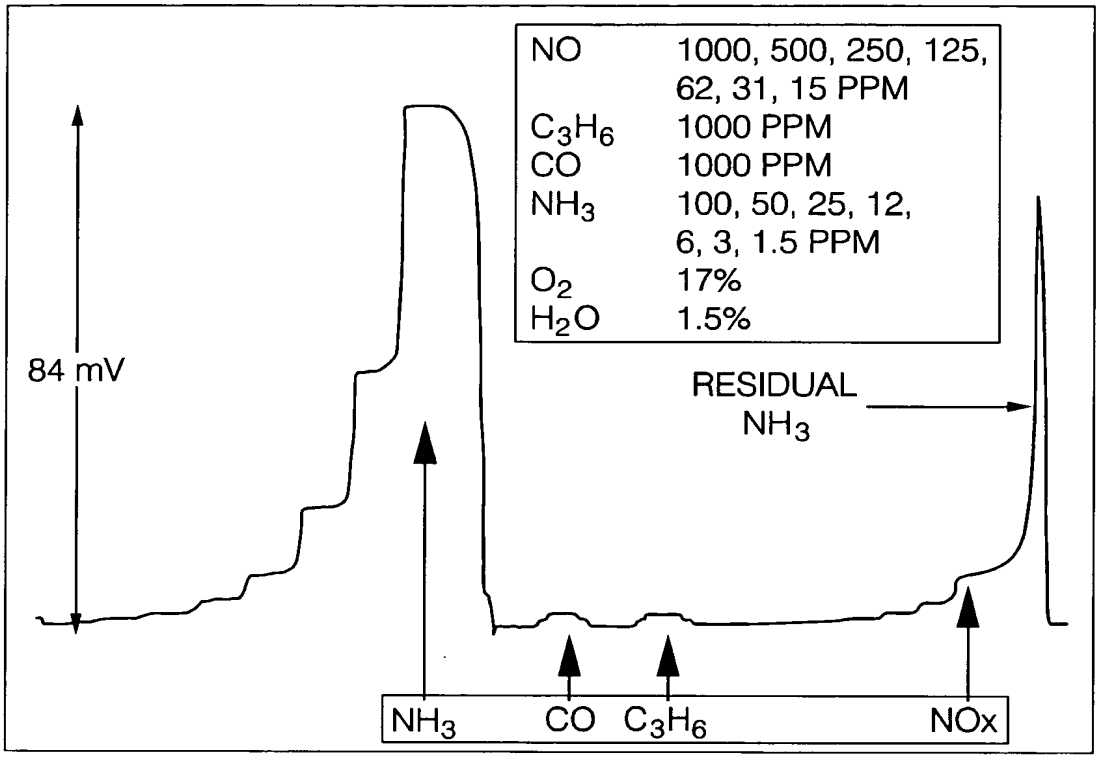
NO 1000, 500, 250, 125, 62, 31, 15 PPM
C_3H_6 1000 PPM
CO 1000 PPM
NH_3 100, 50, 25, 12, 6, 3, 1.5 PPM
O_2 17%
H_2O 1.5%
84 mV
RESIDUAL NH_3
NH_3
CO
C_3H_6
NOx

FIG. 3

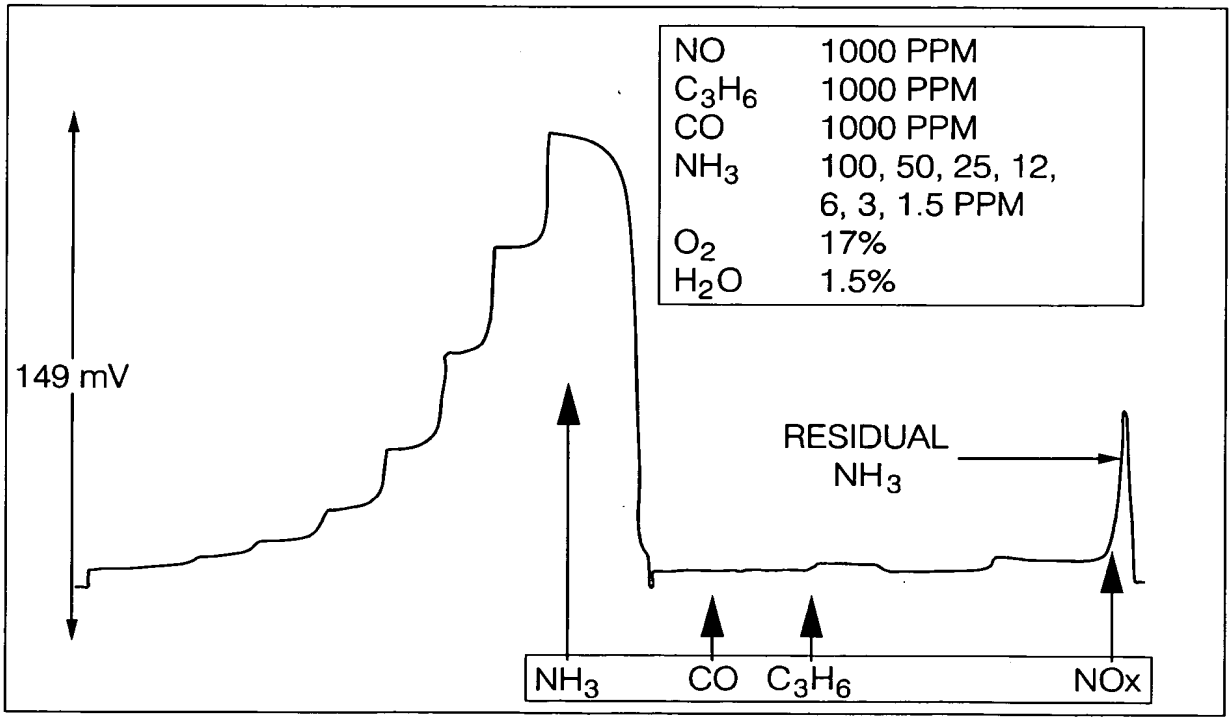
NO 1000 PPM
C_3H_6 1000 PPM
CO 1000 PPM
NH_3 100, 50, 25, 12, 6, 3, 1.5 PPM
O_2 17%
H_2O 1.5%
149 mV
RESIDUAL NH_3
NH_3
CO
C_3H_6
NOx

FIG. 4

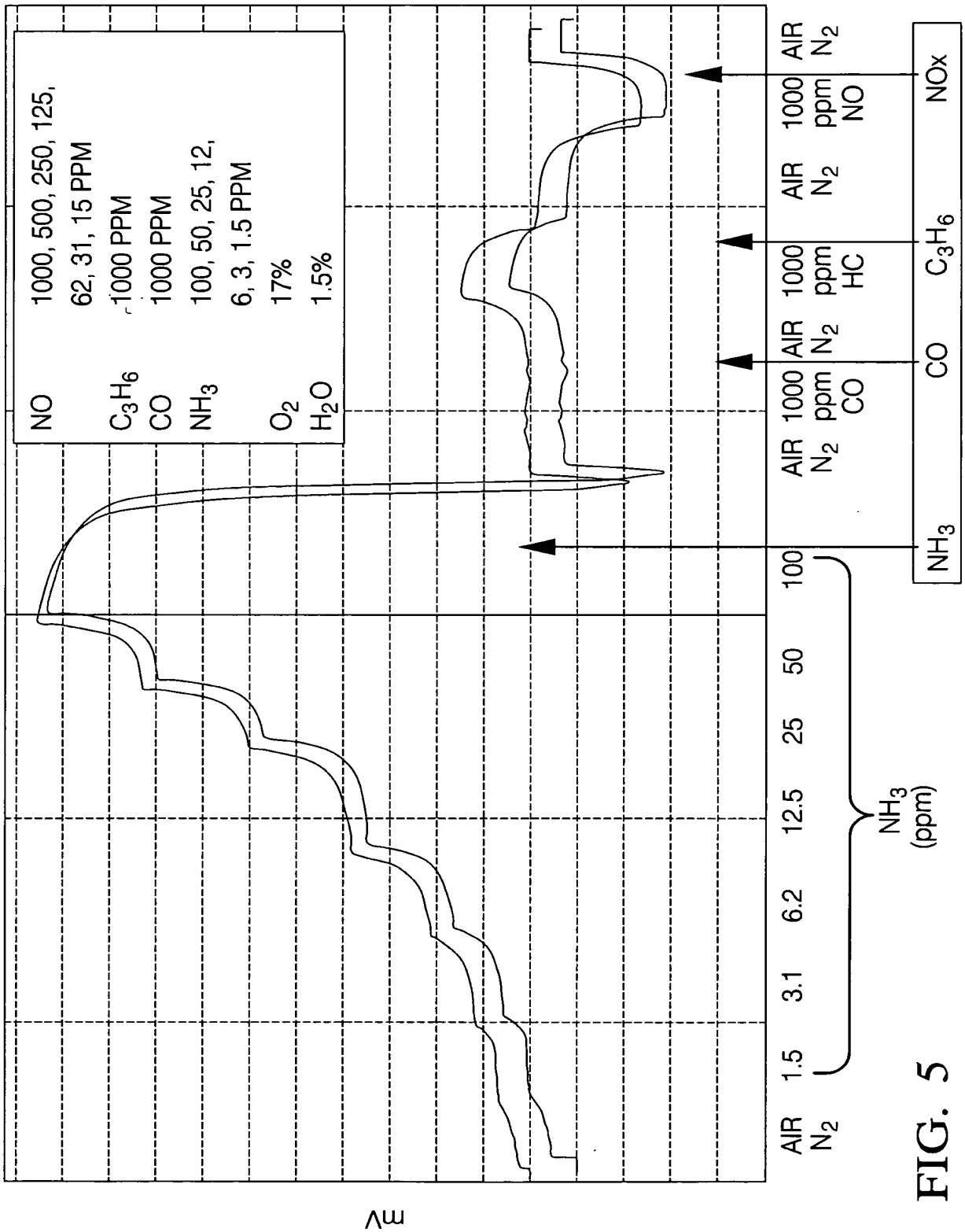
NO
C_3H_6
CO
NH_3
O_2
H_2O
1000, 500, 250, 125,
62, 31, 15 PPM
1000 PPM
1000 PPM
100, 50, 25, 12,
6, 3, 1.5 PPM
17%
1.5%
mV
AIR N_2
1.5
3.1
6.2
12.5
25
50
100
NH_3 (ppm)
AIR N_2
1000 ppm CO
AIR N_2
1000 ppm HC
AIR N_2
1000 ppm NO
AIR N_2
NH_3
CO
C_3H_6
NOx

FIG. 5

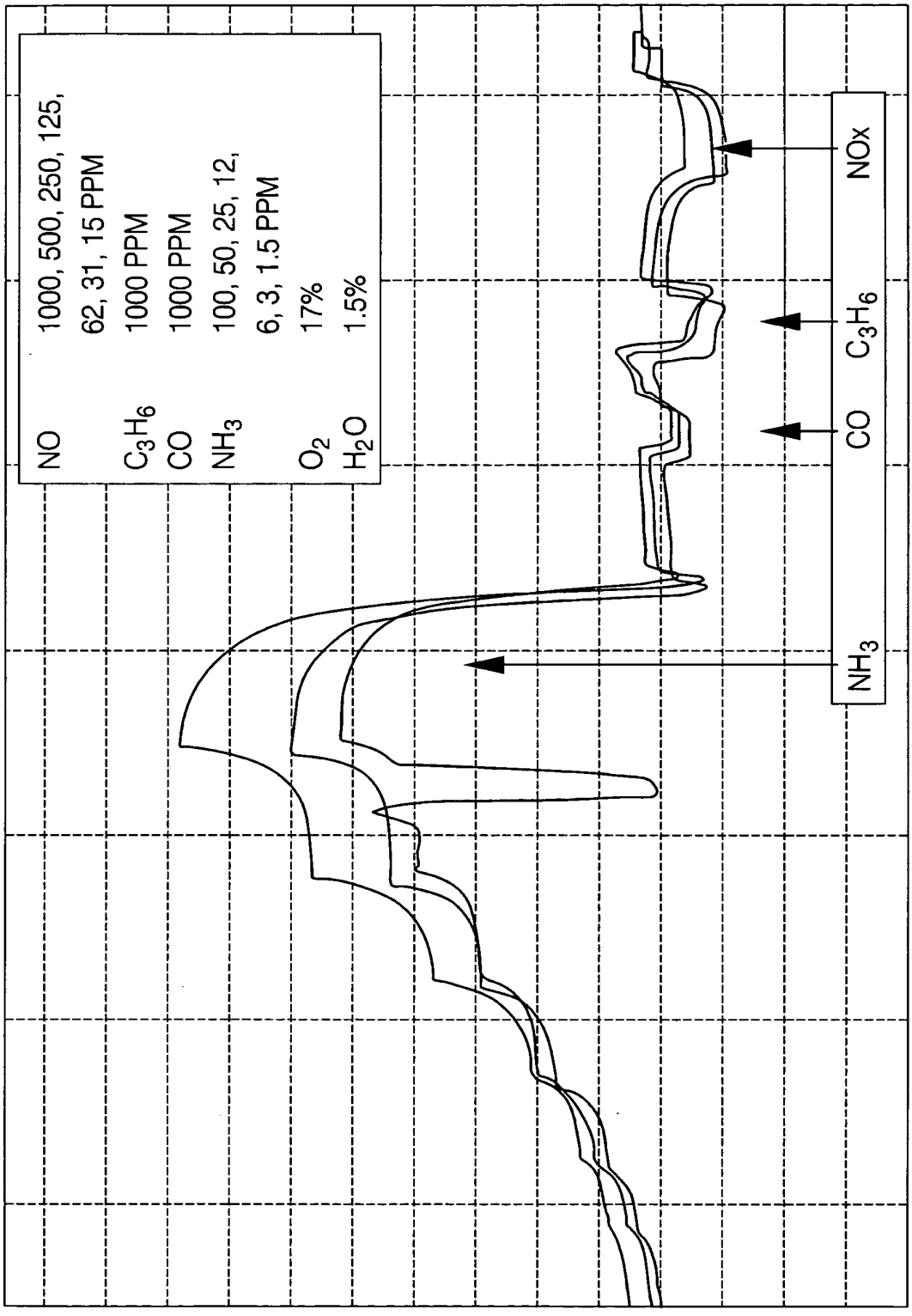
NO 1000, 500, 250, 125, 62, 31, 15 PPM
C_3H_6 1000 PPM
CO 1000 PPM
NH_3 100, 50, 25, 12, 6, 3, 1.5 PPM
O_2 17%
H_2O 1.5%
mV
AIR N_2 1.5 3.1 6.2 12.5 25 50 100 AIR N_2 1000 ppm CO AIR N_2 1000 ppm HC AIR N_2 1000 ppm NO
NH_3 CO C_3H_6 NOx
NH_3 (ppm)

FIG. 6

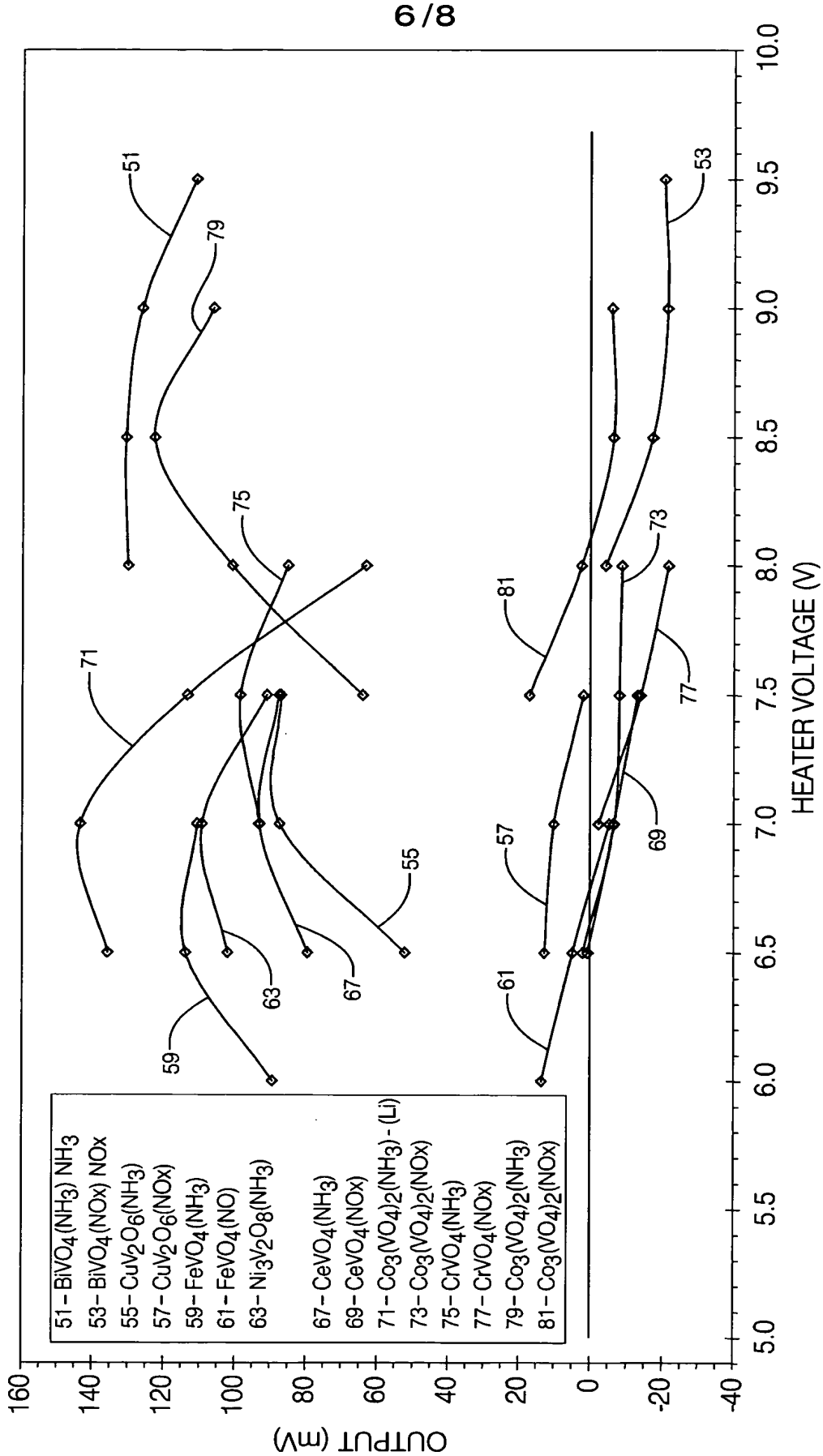
51 - $BiVO_4(NH_3)$ NH_3
53 - $BiVO_4$(NOx) NOx
55 - $CuV_2O_6(NH_3)$
57 - CuV_2O_6(NOx)
59 - $FeVO_4(NH_3)$
61 - $FeVO_4$(NO)
63 - $Ni_3V_2O_8(NH_3)$
67 - $CeVO_4(NH_3)$
69 - $CeVO_4$(NOx)
71 - $Co_3(VO_4)2(NH_3)$ - (Li)
73 - $Co_3(VO_4)2$(NOx)
75 - $CrVO_4(NH_3)$
77 - $CrVO_4$(NOx)
79 - $Co_3(VO_4)2(NH_3)$
81 - $Co_3(VO_4)2$(NOx)
OUTPUT (mV)
HEATER VOLTAGE (V)

FIG. 7

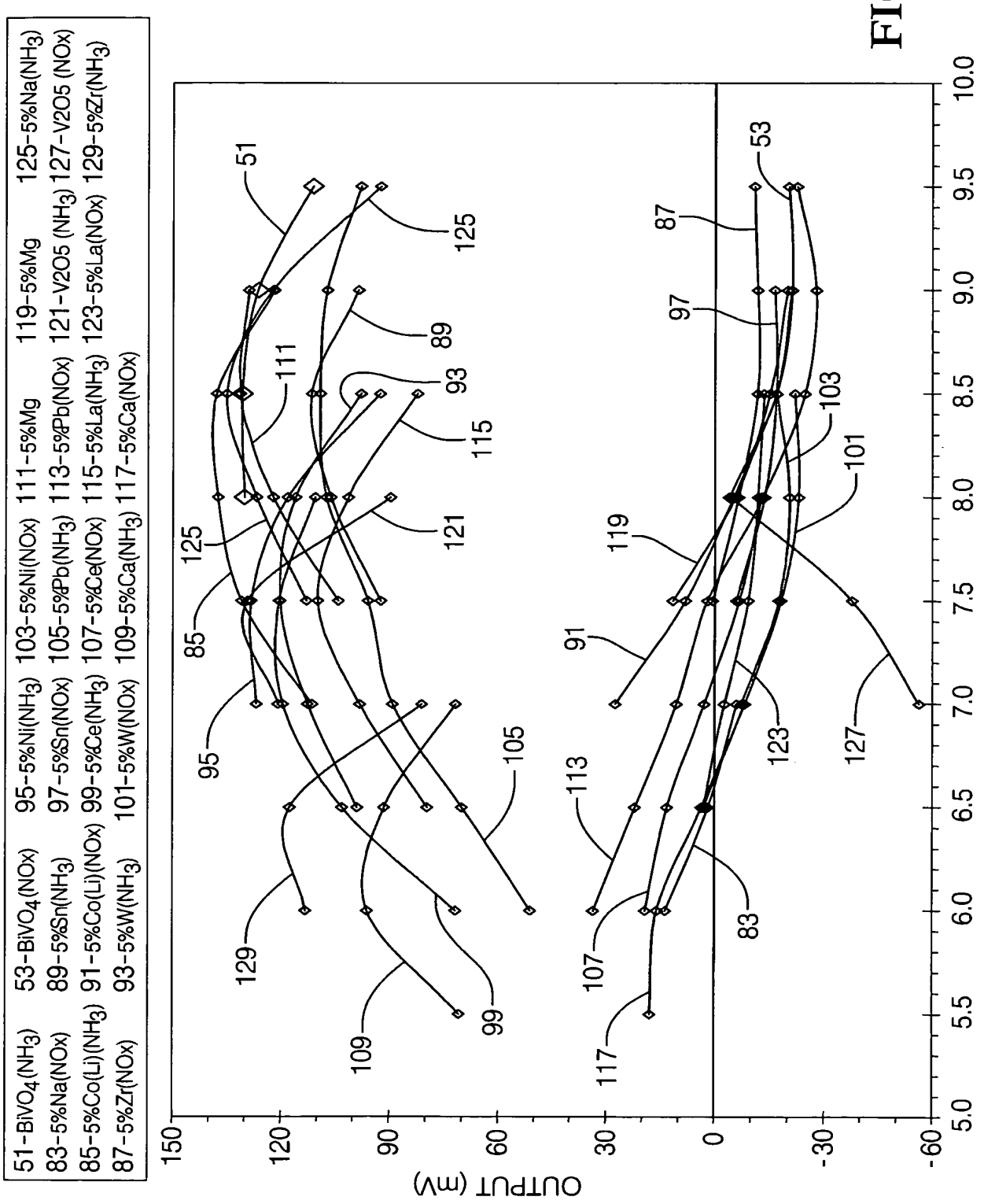
51-BiVO4(NH3) 53-BiVO4(NOx) 95-5%Ni(NH3) 103-5%Ni(NOx) 111-5%Mg 119-5%Mg 125-5%Na(NH3)
83-5%Na(NOx) 89-5%Sn(NH3) 97-5%Sn(NOx) 105-5%Pb(NH3) 113-5%Pb(NOx) 121-V2O5 (NH3) 127-V2O5 (NOx)
85-5%Co(Li)(NH3) 91-5%Co(Li)(NOx) 99-5%Ce(NH3) 107-5%Ce(NOx) 115-5%La(NH3) 123-5%La(NOx) 129-5%Zr(NH3)
87-5%Zr(NOx) 93-5%W(NH3) 101-5%W(NOx) 109-5%Ca(NH3) 117-5%Ca(NOx)
OUTPUT (mV)
150
120
90
60
30
0
-30
-60
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10.0
HEATER VOLTAGE (V)

FIG. 8

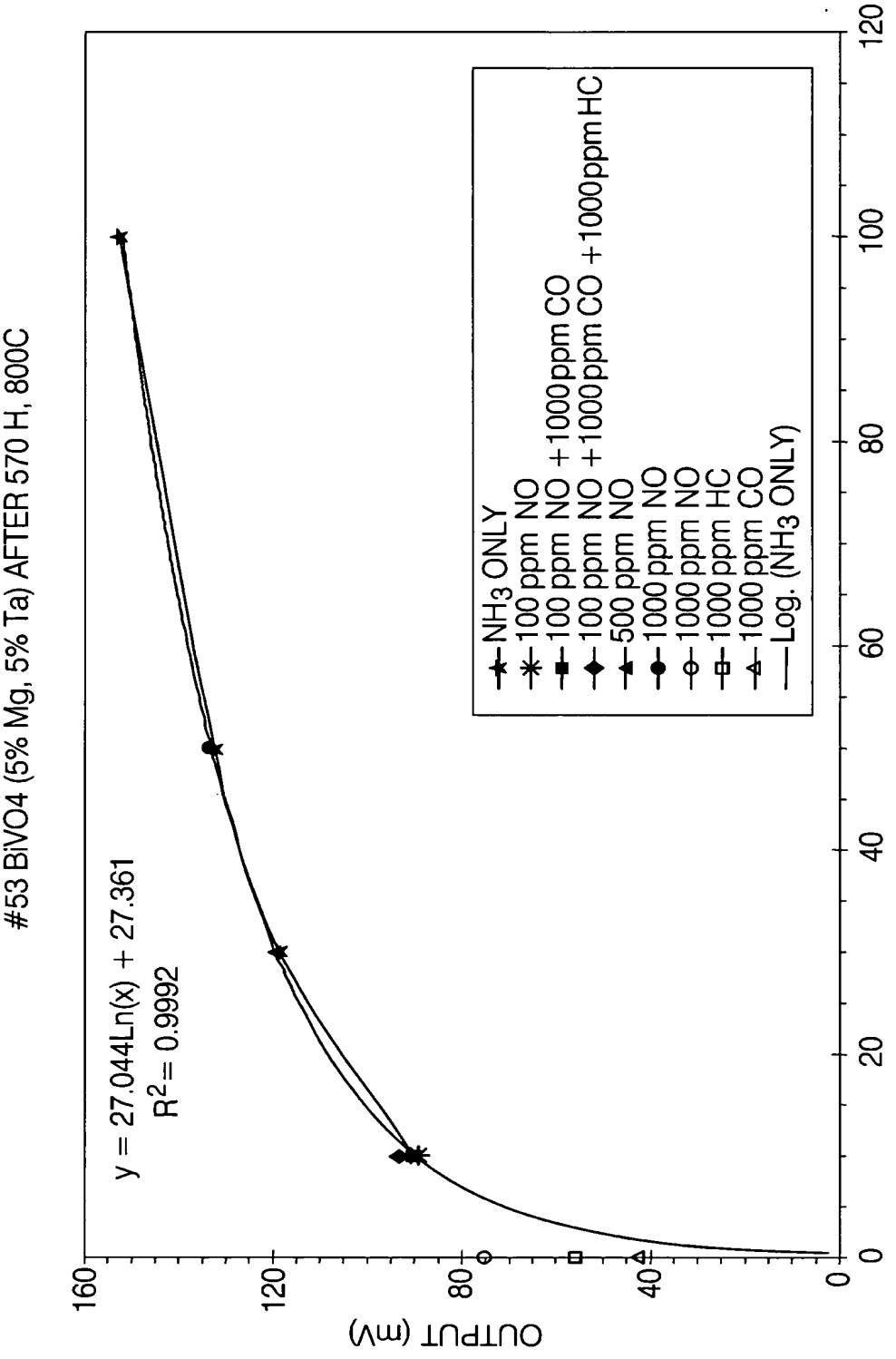
#53 BiVO4 (5% Mg, 5% Ta) AFTER 570 H, 800C
y = 27.044Ln(x) + 27.361
R2= 0.9992
NH3 ONLY
100 ppm NO
100 ppm NO +1000ppm CO
100 ppm NO +1000ppm CO +1000ppm HC
500 ppm NO
1000 ppm NO
1000 ppm NO
1000 ppm HC
1000 ppm CO
Log. (NH3 ONLY)
OUTPUT (mV)
NH3 CONCENTRATION (ppm)
0
40
80
120
160
0
20
40
60
80
100
120

FIG. 9